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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/637,191 | 08/08/2003 | Jurgen Muller | P2001,0082 | 3966 |

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EXAMINER

NGUYEN, PHILLIP

ART UNIT PAPER NUMBER

2828

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/637,191

Applicant(s)

MULLER, JURGEN

Examiner

Phillip Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>8/8/03</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites “a conductivity” which is not clear whether it is thermal conductivity or electrical conductivity.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Choquette et al. ('577).

With respect to claim 1, Choquette discloses in Fig. 1 a semiconductor laser, comprising: a vertical resonator formed by reflectors (14 and 16); a photon-emitting active layer 30 disposed between said reflectors; at least one current diaphragm 20 for laterally circumscribing a current

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flowing through said photon-emitting active layer; and mode-selective regions 38 extending in a vertical direction and laterally delimit said vertical resonator.

With respect to claim 2, Choquette discloses in Fig. 1 a mesa 32 and one of said reflectors (16) is formed in said mesa.

With respect to claim 3, Choquette discloses said mesa has a diameter of larger than 10 μm (col. 9, lines 59-61).

With respect to claim 4, Choquette discloses said current diaphragm being formed from an oxide (col. 5, lines 22-24).

With respect to claims 5-6, Choquette discloses said current diaphragm defines a current aperture having a given diameter of larger than 3 μm (col. 9, lines 59-65).

With respect to claim 7, Choquette discloses in Fig. 1 the mode selective regions defining an inner opening being larger than said current aperture since it has the same diameter as that of the mesa which is 25 μm .

With respect to claim 8, since the mode selection region is an insulating layer, it inherently has an electrical conductivity less than that of said resonator.

With respect to claim 9, Choquette discloses the mode-selective regions being implantation regions (col. 13-14, lines 62-67 and 1-2, respectively).

With respect to claim 10, Choquette discloses in Fig. 1 said vertical resonator has an edge area and said mode-selective regions extend in said edge area and a surrounding region of said edge area of said vertical resonator.

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With respect to claim 12, Choquette discloses the laser 10 having a multilayer structure such as mirror stacks, active layer, and said mode-selective regions are formed in said multilayer structure.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Choquette et al. ('577) in view of Jewell ('891).

Choquette discloses the claimed invention with a single current diaphragm, not at least 2. Jewell discloses in Fig. 5B a semiconductor laser with a vertical cavity formed by reflectors 28 and 84, an active layer 86 is formed between the reflectors and at least two current diaphragms 24. For the improvement of the laser, it would have been obvious to the one having ordinary skill in the art at the time the invention was made to provide more than one current diaphragms in order to have better current confinement in the laser as taught by Jewell to Choquette.

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Citation of Pertinent References

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The patent to Choquette et al. discloses Efficient Semiconductor ... Method, U.S. Patent No. 5493577

The patent to Jewell discloses Conductive Element... Barrier, U.S. Patent No. 5719891

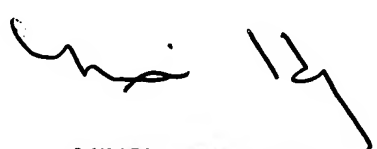
Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phillip Nguyen whose telephone number is 571-272-1947. The examiner can normally be reached on 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MINSUN HARVEY, can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

pn, AU 2828


MINSUN HARVEY
PRIMARY EXAMINER